

**REMARKS/ARGUMENTS**

Favorable reconsideration of this application is requested in view of the amendments made above and the remarks that follow. No new matter has been introduced by this amendment.

As described in the specification as filed, the present invention is a paper or board that is fracture and crack-resistant but that retains other desirable mechanical properties. In the paper or board of the invention a thin film of polymer material is deposited in a discontinuous geometric pattern onto a pre-formed web of cellulose fibers to form a plurality of spaced apart crack-arresting islands that impede crack propagation and fracturing in the web. See page 2, lines 1-9; page 3, lines 4-9; page 4, lines 12-37; and page 6, lines 14-19. The polymer material penetrates into the web to define a substantially uniform surface for subsequent treatment such as coating and printing. See page 4, lines 12-24. Mechanical properties such as modulus of elasticity and tensile strength are unchanged in a paper or board treated in accordance with the invention. See page 6, lines 14-19.

The present invention is a product having structure and function not suggested in the references of record, whether the references are considered individually or in combination.

Claims 1-3, 6, 8, 18, 20-27, 29 and 31-43 were rejected under 35 USC 112, first paragraph, on the grounds that these claims contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the rejection states that the phrases “spaced crack-arresting islands that impede crack propagation” and “crack-arresting islands that impede crack propagation and fracturing in said web without adversely affecting the modulus of elasticity and tensile strength” are not supported by the specification.

Although the exact phrasing of the language used in the claims may not have appeared in the specification as filed, the structure and function defined by the amended language find clear support. See page 2, lines 1-9, page 3, lines 2-14, page 4, lines 12-37, page 5, lines 16-19, and page 6, lines 14-33. However, in order to avoid any ambiguity concerning support for these phrases, application has amended the specification to include the particular language employed in the claims. The amended language does not introduce any new matter but merely provides the same language in the specification as used in the claims.

Claims 1-3, 6, 8, 18, 20-27, 29 and 31-44 were rejected under 35 USC 103(a) as unpatentable over Gentile (USPN 3,879,257). In making this rejection the examiner alleged that since Gentile discloses a cellulose papermaking fiber network with a bonding material impregnated in the web on at least one side in discontinuous geometric formations, it would be obvious for the impregnated material to form spaced crack-arresting islands that impede crack propagation in the web to give a uniform surface, as claimed.

Applicant does not fully understand what the examiner intends by the statement “it would be obvious for the impregnated material to form spaced crack-arresting islands that impede crack propagation in the web to give a uniform surface”. What makes it obvious? What is the source of the teaching to convert the structure and function of Gentile to the structure and function of the presently claimed invention? Does the examiner mean to say that it would be inherent for the impregnated material in Gentile to form spaced crack-arresting islands? If so, then applicant respectfully disagrees. See the following.

Gentile is directed to an entirely different invention than the crack-resistant paper or board of the present invention. The present invention is a relatively dense, hard paper or board having a uniform surface suitable for subsequent treatment such as coating and printing. Gentile discloses a fibrous web that is specially constructed for softness and absorbency, while retaining abrasion resistance at the surfaces of the web. He adds a bonding agent to at least one surface, and preferably both surfaces, to produce a soft absorbent web having abrasion resistant surface

regions and a soft central core. The bonding agent is applied in a fine, spaced-apart pattern so that the web retains its absorbency – not for any purpose related to crack propagation, and it is submitted that in the structure of Gentile the bonding agent would not function to impede crack propagation. In fact, the particular application of the bonding agent and the creping of the web in Gentile cause internal splitting in scattered areas of the web to form void pockets, thus increasing the absorbency of the loose, bulky fibrous structure of Gentile. See column 7, lines 50-65. Moreover, creping of the web in Gentile gives it a roughened or undulating surface to increase the web's bulk and absorbency. See column 5, lines 21-68. The web of Gentile does not have a uniform surface as called for in the claims of the present application.

Regarding claims 8, 31 and 39, the examiner contended that Gentile discloses adding a second, distinct bonding material to the second surface of the web, thereby meeting the terms of these claims. However, these claims have been amended to call for the subsequent distinct polymer material to be coated on the same surface of the paper or board to which the polymer was applied that forms the crack-arresting islands. Gentile clearly does not disclose this feature.

Regarding claims 37-38, the examiner contended that the phrase “wherein the paper or board is calendered” introduces a process limitation and cannot be given any patentable weight. Applicant submits that this phrase describes a physical attribute of the paper, and is not a process limitation. The term “calendered paper” is recognized in the industry as referring to paper that has been smoothed and compacted between the rolls of a calender and is thus more or less glossy. Although applicant believes the phrase as previously written describes a physical attribute and not a process step, the claim has been amended to state that the paper or board comprises calendered paper or board, thereby clearly defining a physical attribute.

Regarding claims 40-42, the examiner contended that Gentile discloses printing the web at column 22, lines 3-6. Applicant submits that the use of the phrase “printed web” by Gentile in column 22, line 3, does not refer to “printing” in the usual sense. What Gentile is referring to is the process of applying the bonding material by passing the web through a nip formed by a

patterned gravure roll and an elastomer roll. See column 21, lines 45-59. While this may, in a very general sense, be “printing”, it is not “print” as contemplated by claims 40-42.

Regarding claim 44, generally the same comments apply as made above in connection with claim 1. Further, the examiner considered the phrase “for subsequent treatment such as coating and printing” to be a statement of intended use and that it did not result in a structural difference between the claimed invention and the prior art. However, this ignores the immediately preceding claim limitation requiring the paper or board to have a substantially uniform flush surface – which is the structural feature that makes it suitable “for subsequent treatment such as coating and printing”. Gentile does not have this claimed feature.

There is no suggestion in Gentile of making a crack resistant paper or board wherein a thin film of polymer is deposited in a discontinuous geometric pattern onto a cellulosic fiber web to produce islands of polymer-impregnated fiber that impede fracturing and crack propagation in the web, and wherein the polymer penetrates into the web so that the surface of the web is substantially uniform, all as claimed herein. Moreover, modifying Gentile to produce the presently claimed invention would change the nature of the invention in Gentile and would render it unsuitable for its intended purpose. Further, as discussed above all of the claimed elements are not found in Gentile.

To establish obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991).

A rationale to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950).

As reiterated by the Supreme Court in KSR, the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Although the Supreme Court in KSR cautioned against an overly rigid application of the teaching, suggestion, motivation (TSM) rationale, it also recognized that TSM was one of a number of valid rationales that could be used to determine obviousness. (According to the Supreme Court, establishment of the TSM approach to the question of obviousness “captured a helpful insight.” As discussed above, there is no teaching, suggestion or motivation in the prior art for making the claimed invention.

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, or require a substantial reconstruction and redesign of the elements shown in the primary reference, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 122 USPQ 349 (CCPA 1959).

The examiner must determine what is “analogous prior art” for the purpose of analyzing the obviousness of the subject matter at issue. “In order to rely on a reference as a basis for rejection of an applicant’s invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” (emphasis added) *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). *State Contracting & Eng’g Corp. v. Condotte America, Inc.*, 346 F.3d 1057, 1069, 68 USPQ2d 1481, 1490 (Fed. Cir. 2003) (where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved).

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For the above reasons it is submitted that the claims as amended define patentable and allowable subject matter and the rejection of the claims as obvious over Gentile should be withdrawn. An early and favorable action on the merits is requested.

Respectfully submitted,

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